

REMARKS

Claims 1-21 remain in the application. Independent claims 1 and 17 have been amended to include the limitation of the substrate being a semiconductor. No new subject matter has been added with these amendments. Thus, claims 1-21 remain pending.

A. 35 U.S.C. § 102(b)

Mann - Claims 1-8 and 14-21

Claims 1-8 and 14-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,198,670 issued April 15, 1980 to Gamdur S. Mann, (hereinafter "the Mann patent") (Office Action, pages 2). For at least the reasons set forth below, Applicant submits that claims 1-8 and 14-21 are not anticipated by the Mann patent.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claims 1 and 17 (from which claims 2-8 and 18-21 depend, respectively) have been amended to add the limitation of the substrate being a semiconductor substrate. Independent claim 14 (from which claims 15-16 depend) includes the limitation of the substrate being a semiconductor substrate.

The Official Action at page 2 states that the Mann patent teaches a "fixed charge plate 14 disposed in a substrate 18." However, the substrate disclosed in the Mann patent is a plastic

substrate (col 1, lines 47-48). Thus, the Mann patent teaches a substrate which is not a semiconductor substrate. Therefore, as the Mann patent does not teach or disclose a semiconductor substrate, reconsideration and withdrawal of the Section 102(b) rejection of claims 1, 14 and 17 are respectfully requested.

In addition, since dependent claims include all of the limitations of the independent claims from which they depend, claims 2-8, 15-16, and 18-21, which depend from claims 1, 14 and 17 respectively, are not anticipated by the Mann patent. Therefore, reconsideration and withdrawal of the Section 102(b) rejection of claims 1-8 and 14-21 are respectfully requested.

B. 35 U.S.C. § 103(a)

Mann in view of Takaishi - Claim 9-13

Claims 9-13 stand rejected under 35 U.S.C. § 103(a) as being obvious over the Mann patent in combination with the U.S. patent No. 5,973,343 issued October 26, 1999 to Yoshihiro Takaishi (hereinafter "the Takaishi patent") (Office Action, pages 3).

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The Office contends that "it would have been obvious to use the capacitor of Mann in a semiconductor device" (Office Action at page 3).

The Office Action relies on the Mann reference for a teaching of a "fixed charge plate 14 disposed in a substrate 18." However, the substrate disclosed in the Mann patent is a plastic, not a semiconductor substrate, as disclosed in claim 9 of the present invention. The Office points out that the Mann capacitor is not used in a semiconductor device. In fact, the Mann invention is directed towards "a capacitive pressure transducer to sense fluid pressure which is both rugged and accurate" (col. 1, lines 7-10).

Claim 9 of the present invention discloses a variable capacitor in a semiconductor device. The Applicant discloses that the "variable capacitor relates to a micro-electromechanical system (MEMS) fabrication, and is tunable over a wide range" (Background of the Invention section of the present application at page 2, lines 1-5), and the "capacitor of the present invention may enable a wireless device to operate at multiple band widths such as 900, 1.9 and 2.4 GHz" (Detailed Description section of the present invention at page 14-15, lines 24-25). Thus, such a capacitor may be used in a wireless communication device; such as for example, in a cellular phone.

"In order to rely on a reference as a basis of rejection for an applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, be reasonably pertinent to the particular problem with which the invention concerned." *In re Clay*, 996 F.2d 656, 659 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). (See M.P.E.P. 2141.01(a)). The Mann patent involves a different field of endeavor because it teaches the use of a capacitive pressure transducer in a different structure, i.e. a plastic package, for a different purpose, i.e. sensing fluid pressure in such applications as would typically be used in the automobile industry to sense oil pressure, for example. In fact, the Mann patent teaches away from the use of a semiconductor substrate,

because the invention is directed towards materials which are not "thin, ceramic or semiconductor materials which require special handling" (col.1, lines 12-14). Thus, the Mann patent is not reasonably pertinent, because a person having reasonable skill in the art would not expect to solve the problem of enabling a wireless device to operate at multiple band widths by considering a reference that is directed towards sensing oil pressure in a car. Therefore, the Mann patent does not suggest or motivate the use of a variable capacitor in a semiconductor device.

Takaishi discloses a capacitor used in a semiconductor device, in which the capacitor CP is a non-variable storage capacitor (col. 6, line 6). The Takaishi patent involves a different field of endeavor, because it teaches the use of a non-variable capacitor in a different structure (memory device), for a different purpose, i.e. the storage of charge in a memory cell. In fact, the Takaish patent teaches away from the use of a variable capacitor which enables a wireless device to operate at multiple band widths, because the invention of the Takaishi patent is designed to reduce the cost of fabrication (col. 3, lines 57-61, and col. 4, lines 1-3). The costly additional process steps which would be required in order to fabricate a variable capacitor in a memory cell, especially where it is well known to those skilled in the art that the operation of a memory cell does not require a variable capacitor, are contrary to the teachings of the Takaishi patent. Thus, the Takaishi patent is not reasonably pertinent, because a person having reasonable skill in the art would not expect to solve the problem of enabling a wireless device to operate at multiple band widths by considering a reference that is directed towards storing charge in a memory device, while reducing fabrication steps and cost. Therefore, the Takaishi patent does not teach or motivate the use of a variable capacitor as taught in the Mann patent, in a semiconductor device.

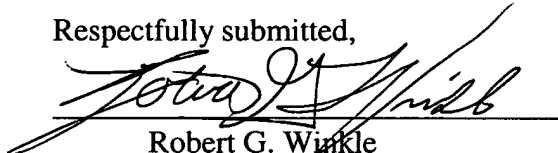
Therefore, there is no suggestion or motivation in either the Mann patent or in the Takaishi patent, to modify or combine the references in order to establish prima facie case of obviousness. Thus, claim 9 is not rendered obvious by Mann in view of Takaishi.

"If an independent claim is nonobvious, then any claim depending from the independent claim is also nonobvious." *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1998). Because dependent claims 10-13 depend from claim 9, Applicant submits that claims 10-13 are not rendered obvious by the Mann patent. Therefore, reconsideration and withdrawal of the Section 103(a) rejection of claims 9-13 are respectfully requested.

In view of the foregoing remarks, the Applicants request allowance of the application. Please forward further communications to the address of record. If the Examiner needs to contact the below-signed attorney to further the prosecution of the application, the contact number is (503) 712-1682.

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Respectfully submitted,



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VERSION OF CLAIMS WITH MARKINGS

IN THE CLAIMS:

- 1 1. (Amended) A capacitor, comprising:
- 2 a fixed charge plate disposed in a semiconductor substrate;
- 3 a moveable charge plate disposed above the fixed charge plate; and
- 4 a stiffener affixed to the moveable charge plate.
- 5
- 6 17. (amended) A microelectromechanical structure variable capacitor comprising:
- 7 a fixed charge plate disposed upon an elevated semiconductor substrate;
- 8 a fixed actuator plate disposed upon a lower semiconductor substrate,
- 9 wherein the fixed actuator plate is below the fixed charge plate;
- 10 a moveable charge plate suspended above the fixed charge plate; and
- 11 a stiffener disposed upon the moveable charge plate.